CoAlt Science 2023 Performance Level Descriptors Grade 8 Science

Based on the 2020 Colorado Academic Standards with Extended Evidence Outcomes for Middle School Science

Emerging

Students performing at this level demonstrate an initial understanding of concepts and skills represented by the Extended Evidence Outcomes (EEOs) of the Colorado Academic Standards (CAS). They will need extensive academic supports to engage successfully in further studies in the content area.

Approaching Target

Students performing at this level demonstrate a limited understanding of concepts and skills represented by the EEOs of the CAS. They will likely need moderate academic supports to engage successfully in further studies in the content area.

At Target

Students performing at this level demonstrate a foundational understanding of concepts and skills represented by the EEOs of the CAS. They are academically prepared to engage in further studies in the content area with appropriate supports.

Advanced

Students performing at this level demonstrate a solid understanding of the concepts and skills represented by the EEOs of the CAS. They are academically well prepared to engage in further studies in the content area with appropriate supports.

Color Legend for Three-Dimensional Alignment

Colorado Essential Skills and Science and Engineering Practice

Grade Level Expectation

Cross Cutting Concept

	Physical Science				
	Emerging	Approaching Target	At Target	Advanced	
PG 1.	Students can use the full r	ange of science and enginee	ring practices to make sense	e of natural phenomena	
	and solve problems that re	equire understanding struct	ure, properties, and interact	tions of matter.	
GLE	Identify that a molecule	Identify a model of a	Create models of simple	Create models that	
1.1,	is made up of other	simple molecule, such as	molecules and more	represent differences in	
1.2	particles (atoms).	water, oxygen, methane,	complex structures, such	scale, proportion, or	
	(MS.1.1.a)	etc. (MS.1.1.a)	as water, oxygen,	quantity among simple	
			methane, etc.	molecules and more	
			OR	complex structures, such	
			Use models to compare	as water, oxygen,	
			scale, proportion, or	methane, etc. (MS.1.1.a)	
			quantity among simple		
			molecules and more		
			complex structures such		
			as water, oxygen,		
			methane, etc. (MS.1.1.a)		
	Identify a property that	Identify a chemical	Analyze data to identify	Analyze data to identify	
	changes because of a	change based on a	the similarities and	evidence of a chemical	
	chemical change.	change in one property	differences of the	change based on the	
	(1013.1.1.0)	of one substance.	properties of a substance	differences of the	
		(1015.1.1.0)	before and after a	anterences of a substance	
			(MS 1 1 b)	properties of a substance	
			(1013.1.1.0)	(MS 1 1 b)	
				(1013.1.1.0)	
		Identify that natural	Use information to	Use information to	
		resources can be used to	identify an appropriate	identify a change in the	
		make new, synthetic	natural resource for	structure and function of a	
		materials. (MS.1.1.c)	making a new, synthetic	natural resource that is	
			material. (MS.1.1.c)	transformed to make a	
				new, synthetic material.	
				(MS.1.1.c)	
		Identify that a change in	Use a model to identify	Create a model to explain	
		temperature can cause a	what happens when	what happens when	
		change in the state of a	changes in temperature	changes in temperature	
		pure substance.	change the state of a	change the state of a pure	
		(MS.1.1.d)	pure substance.	substance. (MS.1.1.d)	
			(MS.1.1.d)		
	Identify a property of an	Identify a chemical	Use graphical displays to	Use graphical displays to	
	object that changes	change based on a	identity the similarities	identify evidence of a	
	because of a chemical	change in energy.	and differences of the	chemical change based on	
	cnange. (MS.1.2.a)	(1/15.1.2.a)	properties of a substance	the similarities and	
			perore and atter a	unterences of the	
			(MS 1 2 c)	properties of a substance	
			(IVIS.1.2.8)	before and after a change.	
				(IVIS.1.2.a)	

	Physical Science				
	Emerging	Approaching Target	At Target	Advanced	
	Identify that atoms have	Use a model to identify	Use a model to identify	Create a model to	
	mass. (MS.1.2.b)	that the number or the	that the number or the	demonstrate how the	
		mass of atoms does not	mass of atoms does not	number or the mass of	
		change in a chemical	change in a chemical	atoms does not change in	
		reaction. (MS.1.2.b)	reaction, they are just	a chemical reaction, they	
			rearranged. (MS.1.2.b)	are just rearranged.	
				(MS.1.2.b)	
		Identify a device that	Explain the operation of	Propose the design, a test,	
		releases or absorbs	a device that releases or	or a modification of a	
		thermal energy by	absorbs thermal energy	device that releases or	
		chemical processes.	by chemical processes.	absorbs thermal energy by	
		(MS.1.2.c)	(MS.1.2.c)	chemical processes.	
				(MS.1.2.c)	
PG 2.	Students can use the full r	ange of science and enginee	ring practices to make sense	e of natural phenomena	
	and solve problems that re	equire understanding intera	ctions between objects and	within systems of objects.	
GLE	Identify a force as what	Identify a solution that	Identify a solution that	Design a solution to	
1.3,	makes objects move,	reduces the force of	reduces the force of	reduce the force of impact	
1.4	change direction, or	impact in a collision of	impact in a collision of	in a collision of two	
	become damaged.	two objects in which one	two objects in motion.	objects in motion or in	
	(MS.1.3.a)	is in motion, and one is	(MS.1.3.a)	which one is in motion,	
		stationary. (MS.1.3.a)		and one is stationary.	
				(MS.1.3.a)	
	Identify a force as what	Use an investigation to	Use an investigation to	Plan an investigation that	
	makes objects move or	predict that objects with	predict that the motion	provides evidence that the	
	change direction.	greater mass will impact	of objects with less mass	motion of objects with	
	(MS.1.3.b)	with greater force than	will change more than	less mass will change	
		objects with less mass	the motion of objects	more than the motion of	
		moving at the same	with more mass when	objects with more mass	
		speed. (MS.1.3.b)	acted upon by an	when acted upon by an	
			equivalent force.	equivalent force.	
			(MS.1.3.b)	(MS.1.3.b)	
	ldentify <mark>that</mark>	Identify a factor that	Use an investigation to	Ask questions about	
	electromagnetic forces	affects the strength of	determine factors that	evidence gathered from	
	can act at a distance.	electromagnetic forces.	affect the strength of	an investigation about	
	(MS.1.4.a)	(MS.1.4.a)	electromagnetic forces.	factors that affect the	
			(MS.1.4.a)	strength of	
				electromagnetic forces.	
				OR	
				Plan an investigation to	
				determine factors that	
				affect the strength of	
				electromagnetic forces.	
				(MS.1.4.a)	

	Physical Science				
	Emerging	Approaching Target	At Target	Advanced	
	Identify that gravitational	Identify mass or distance	Identify a model or visual	Construct a graph, model,	
	forces can act at a	as a factor that affects	representation that	or visual representation to	
	distance. (MS.1.4.b)	the gravitational forces	shows evidence of	show evidence of	
		on interacting objects.	gravitational forces on	gravitational forces on	
		(MS.1.4.b)	interacting objects of	interacting objects of	
			different mass.	different mass. (MS.1.4.b)	
			(MS.1.4.b)		
	Identify that	Identify an electric or	Identify evidence from an	Plan an investigation that	
	electromagnetic forces	magnetic field as a cause	investigation that electric	provides evidence that	
	can act at a distance.	of the exertion <mark>of force</mark>	or magnetic fields exist	electric or magnetic fields	
	(MS.1.4.c)	on an object.	between objects exerting	exist between objects	
		OR	forces on each other	exerting forces on each	
		Identify evidence from an	even though the objects	other even though the	
		investigation that electric	are not in contact.	objects are not in contact.	
		or magnetic fields exist.	(MS.1.4.c)	(MS.1.4.c)	
		(MS.1.4.c)			
PG 3.	Students can use the full r	ange of science and enginee	ring practices to make sense	e of natural phenomena	
	and solve problems that re	equire understanding of hov	v energy is transferred and o	conserved.	
GLE		Identify that the mass	Use graphical displays of	Use graphical displays of	
1.5		and the speed of an	data to identify the	data showing the	
1.6,		object affects the kinetic	relationship of the kinetic	relationship of kinetic	
1.7		energy of the object.	energy of an object to	energy to mass and speed	
		(MS.1.5.a)	the mass and the speed	to predict the mass,	
			of the object. (MS.1.5.a)	speed, or kinetic energy of	
				an object. (MS.1.5.a)	
		Identify that the distance	Use a model to identify	Create a model to	
		between interacting	that when the position of	demonstrate that when	
		objects affects the	objects interacting at a	the position of objects	
		potential energy stored	distance changes,	Interacting at a distance	
		in the system. (IMS.1.5.D)	different amounts of	changes, different	
			potential energy are	amounts of potential	
			(MS 1 E b)	energy are stored in the	
	Identify that many or loss	Identify a device that	(IVIS.I.S.D)	System. (MS.1.5.D)	
	thermal energy makes an	aither minimizes or	compare data to identify	compare data to explain	
	chermal energy makes an	either minimizes of			
	colder (MS 1 E c)	maximizes thermal	thermal energy transfer	thermal energy transfer	
		(MS 1 F c)	(MS 1 F c)	(MS 1 E c)	
	Identify a change in	(IVIS.1.5.C)	(IVIS.1.5.C)	(IVI3.1.3.C)	
	tomporature as ovidence	identify avidence that an	identify avidence that an	identify ovidence that a	
	of operature as evidence	operate transfer occurs		shange in temperature	
		when the temperature of	between objects when	massures operav transfer	
	Un Identify a change in	an object changes	their temperatures are	hetween objects of	
	feeling of warmth or	(MS 1 5 d)	different (MC 1 E d)	different masses and	
	coolness as ovidence of	(ואיטידיטיא)		different types of	
	energy transfer			materials (MS 1 5 d)	
	(MS 1 5 d)				
1	(1013.1.3.0)	1	1		

Physical Science			
Emerging	Approaching Target	At Target	Advanced
Identify a change in temperature or phase change as evidence of energy transfer. (MS.1.5.e)	Identify the direction of energy transfer based on a change in temperature of an object. (MS.1.5.e) Identify a device that	Use an investigation to support the claim that the transfer of energy between two objects can be measured by temperature. (MS.1.5.e) Explain the operation of a dovice that minimizer	Propose the design, a test,
	thermal energy transfer from one object to another. (MS.1.6.a)	a device that minimizes or maximizes thermal energy transfer from one object to another. (MS.1.6.a)	device to minimize or maximize thermal energy transfer from one object to another. (MS.1.6.a)
	Identify that the temperature of an object is a measure of the average kinetic energy of the particles making up the object. (MS.1.6.b)	Identify a relationship between the energy transferred to or from an object and the average kinetic energy of the particles making up the object, as measured by the temperature of the object. OR Demonstrate an understanding that the average kinetic energy of the particles making up an object, as measured by the temperature of the object, changes when kinetic energy is transferred to or from the object. (MS.1.6.b)	Demonstrate understanding of a relationship between the energy transferred to or from an object, the type of matter making up the object, the mass of the object, and the change in the average kinetic energy of the particles making up the object, as measured by the temperature of the object. (MS.1.6.b)
	Identify a change in direction of motion as a case of kinetic energy transfer. (MS.1.6.c)	Use a diagram to show that a change in direction or speed of motion is evidence of kinetic energy transfer from one object or another. (MS.1.6.c)	Create a diagram to show that a change in direction or speed of motion is evidence of kinetic energy transfer from one object or another. (MS.1.6.c)

	Physical Science				
	Emerging	Approaching Target	At Target	Advanced	
	Identify that the position	Use a model to identify	Use a model to identify	Create a model to	
	of an object affects the	when an object has more	that when the position of	demonstrate that when	
	potential energy	or less potential energy	objects interacting at a	the position of objects	
	associated with it.	associated with it.	distance changes,	interacting at a distance	
	(MS.1.7.a)	(MS.1.7.a)	different amounts of	changes, different	
			potential energy are	amounts of potential	
			stored in the system.	energy are stored in the	
			(MS.1.7.a)	system. (MS.1.7.a)	
PG 4.	Students can use the full r	ange of science and enginee	ring practices to make sense	e of natural phenomena	
	and solve problems that re	equire understanding of how	v waves are used to transfe	r energy and information.	
GLE	Identify waves as a	Identify that a wave has	Identify how an	Use a visual	
1.8,	carrier of energy.	an observable property	observable property of	representation, simple	
1.9,	(MS.1.8.a)	(e.g., loudness or	the amplitude of waves	graph, or table to show	
1.10		brightness) because it	(e.g., loudness or	how the amplitude of a	
		has energy.	brightness) is related to	wave is related to the	
		(MS.1.8.a)	the energy in the wave.	energy in the wave.	
			(MS.1.8.a)	(MS.1.8.a)	
	Identify that different	Identify how a property	Use a visual	Use multiple	
	materials can affect the	of a material affects the	representation to show	representations to	
	reflection, absorption, or	reflection, absorption, or	that the reflection,	demonstrate how sound	
	transmission of a sound	transmission of a sound	absorption, or	waves are reflected,	
	wave.	wave.	transmission of a sound	absorbed, or transmitted	
	OR	OR	wave is affected by the	through various materials.	
	Identify a material that	Use a visual	properties of a material.	(MS.1.8.b)	
	most or least affects the	representation to	(MS.1.8.b)		
	reflection, absorption, or	identify that different			
	transmission of a sound	materials can affect the			
	wave. (MS.1.8.b)	reflection, absorption, or			
		transmission of a sound			
		wave. (MS.1.8.b)			
	Identify that different	Identify how a property	Use a visual	Use multiple	
	materials can affect the	of a material affects the	representation to show	representations to	
	reflection, absorption, or	reflection, absorption, or	that the reflection,	demonstrate how light	
	transmission of a light	transmission of a light	absorption, or	waves are reflected,	
	wave.	wave.	transmission of a light	absorbed, or transmitted	
	OR	OR	wave is affected by the	through various materials.	
	Identify a material that	Use a visual	properties of a material.	(MS.1.9.a)	
	most or least affects the	representation to	(MS.1.9.a)		
	reflection, absorption, or	identify that different			
	transmission of a light	materials can affect the			
	wave. (MS.1.9.a)	reflection, absorption, or			
		transmission of a light			
		wave. (MS.1.9.a)			

Physical Science				
	Emerging	Approaching Target	At Target	Advanced
		Identify waves as a	Use information to	Use information to
		carrier of information.	identify that digitized	support the claim that
		(MS.1.10.a)	signals are a reliable way	digitized signals are a
			to encode and transmit	reliable way to encode
			information. (MS.1.10.a)	and transmit information.
				(MS.1.10.a)

		Life Sc	tience	
	Emerging	Approaching Target	At Target	Advanced
PG 5.	Students can use the fu	Ill range of science and eng	ineering practices to make s	ense of natural phenomena
	and solve problems that	it require understanding ho	ow individual organisms are	configured and how these
	structures function to s	upport life, growth, behavi	ior, and reproduction.	
GLE	Identify a cell as the	Identify the tools,	Identify how an	Use evidence from an
2.1,	smallest living part of	instruments, or	investigation could show	investigation to show that
2.2,	a living thing.	methods that can be	that living things are	living things are made of
2.3,	(MS.2.1.a)	used to see or learn	made of one or more	one or more cells. (MS.2.1.a)
2.4		about cells.	cells. (MS.2.1.a)	
		(MS.2.1.a)		
	Identify that all plants	Use a model to identify	Use a model to identify	Develop or use a model to
	and animals are made	one major component	at least three major	identify three major
	up of cells. (MS.2.1.b)	of a plant or animal cell.	components of a plant or	components of a plant or
		OR	animal cell.	animal cell and the primary
		Identify the primary	OR	role of each component.
		roles of one major	Identify the primary roles	(MS.2.1.b)
		component of a plant or	of at least three major	
		animal cell.	components of a plant or	
		(MS.2.1.b)	animal cell.	
			(MS.2.1.b)	
	Identify that an organ	Identify that the major	Use evidence to show	Use evidence to show that
	is made up of cells.	organs that make up a	that major organs are	the major organs that make
	(MS.2.1.c)	specific system are	made up of cells.	up specific systems interact
		made up of cells.	OR	and are made up of cells.
		(MS.2.1.c)	Identify how the major	(MS.2.1.c)
			organs that make up	
			specific systems interact	
			and are made up of cells.	
			(MS.2.1.c)	
		Identify how	Identify how	Use evidence to show that
		characteristic animal	characteristic animal	characteristic animal
		behaviors and	behaviors and specialized	behaviors and specialized
		specialized plant	plant structures help	plant structures help them
		structures help them	them survive and	survive and reproduce in a
		survive. (IVIS.2.2.a)	reproduce in a given	given environment.
			environment. (MIS.2.2.a)	(MS.2.2.a)
		Identify an	Identify how an	Use data to show how
		environmental factor	organism's growth is	different environmental
		that influences the	influenced by an	factors influence the growth
		growth of an organism.	environmental factor.	of organisms. (MIS.2.2.b)
		(IVIS.2.2.D)	(IVIS.2.2.D)	resultation in the second second
	Identify light, carbon	Identify that	Identify how	Explain how photosynthesis
	dioxide, or water as a	photosynthesis needs	photosynthesis plays a	plays a role in the cycling of
	necessary input into	the input of matter and	role in the cycling of	matter and the flow of
	photosynthesis.	energy. (IVIS.2.3.a)	matter and the flow of	energy between plants and
	(IVIS.2.3.a)		energy between plants	animais. (IVIS.2.3.a)
1			and animals. (IVIS.2.3.a)	

	Life Science				
	Emerging	Approaching Target	At Target	Advanced	
	Identify food as a	Use a model to identify	Use a model to show	Develop a model to show	
	source of matter and	the flow of matter and	how food supports	how food supports growth	
	energy for growth.	energy used for growth.	growth and releases	and releases energy in an	
	(MS.2.3.b)	(MS.2.3.b)	energy in an organism.	organism. (MS.2.3.b)	
			(MS.2.3.b)		
	Identify that	Use information to	Use information to	Use information to identify	
	organisms sense and	identify that the	identify that organisms	how organisms detect,	
	respond <mark>to</mark>	nervous system is	detect, process, and use	process, and use	
	information (stimuli).	involved in the	information via the	information via the nervous	
	(MS.2.4.a)	processing of	nervous system for	system for immediate use or	
		information and	immediate use or to	to store information as a	
		formation of memories.	store information as a	memory. (MS.2.4.a)	
		OR	memory. (MS.2.4.a)		
		Identify that organisms			
		detect, process, and use			
		information for			
		immediate use or to			
		store information as a			
		memory.			
		(MS.2.4.a)			
PG 6.	Students can use the fu	Ill range of science and eng	ineering practices to make s	ense of natural phenomena	
	and solve problems that	at require understanding ho	ow living systems interact w	ith the biotic and abiotic	
	environment.				
GLE	Identify that an	Identify how a change in	Identify how a change in	Use data to identify how a	
2.5,	individual organism is	environmental	environmental conditions	change in environmental	
2.6,	helped or hurt by the	conditions such as	such as resource	conditions such as resource	
2.7	availability of a	resource availability can	availability can affect	availability can affect	
	resource. (MS.2.5.a)	affect an individual	organisms and	organisms and populations	
		organism. (MS.2.5.a)	populations in an	in an ecosystem. (MS.2.5.a)	
			ecosystem. (MS.2.5.a)		
		Identify an example of	Identify an example of	Explain the differences	
		competitive, predatory,	competitive, predatory,	between competitive,	
		and mutually beneficial	and mutually beneficial	predatory, and mutually	
		relationships between	relationships between	beneficial relationships	
		organisms. (MS.2.5.b)	organisms in at least	between organisms in at	
			three different	least three different	
			ecosystems. (MS.2.5.b)	ecosystems. (MS.2.5.b)	

	Life Science				
	Emerging	Approaching Target	At Target	Advanced	
	Identify that living	Use a model to identify	Use a model to identify	Develop a model to show	
	things receive inputs	an input of matter or	an example of how	how matter and energy are	
	of matter and energy.	energy into a living	matter and energy are	cycled among living and	
	(MS.2.6.a)	thing.	cycled among living and	nonliving parts of an	
		OR	nonliving parts of an	ecosystem. (MS.2.6.a)	
		Identify an example of	ecosystem. (MS.2.6.a)		
		the cycling of matter			
		and energy among living			
		and nonliving parts of			
		an ecosystem.			
		(MS.2.6.a)			
		Identify an effect on a	Identify examples of how	Use evidence to show how	
		population from a	changes to physical or	changes to physical or	
		change in a physical or	biological components of	biological components of an	
		biological component of	an ecosystem affect	ecosystem affect	
		an ecosystem.	populations. (MS.2.7.a)	populations. (MS.2.7.a)	
		(MS.2.7.a)			
	Identify that the	Identify how a design	Compare the economic		
	health of an	solution maintains the	costs, social		
	ecosystem can change	health of an ecosystem	considerations, or		
	when the system is	in the face of a	scientific constraints of		
	disturbed. (MS.2.7.b)	disruption to a physical	two design solutions for		
		or biological component	maintaining the health of		
		of the system.	an ecosystem in the face		
		(MS.2.7.b)	of a disruption to a		
			physical or biological		
			component of the		
			system. (MS.2.7.b)		
PG 7.	Students can use the fu	Ill range of science and eng	ineering practices to make s	sense of natural phenomena	
	and solve problems that	it require understanding ho	ow genetic and environment	tal factors influence variation	
	of organisms across gen	nerations.			
GLE		Identify genes as things	Use a model to identify	Develop a model of how	
2.8		that change to result in	that structural changes to	structural changes to genes	
		harmful, beneficial, or	genes (mutations) result	(mutations) result in	
		neutral effects for an	in harmful, beneficial, or	harmful, beneficial, or	
		organism. (MS.2.8.a)	neutral effects for an	neutral effects for an	
			organism. (MS.2.8.a)	organism. (MS.2.8.a)	

	Life Science				
	Emerging	Approaching Target	At Target	Advanced	
	Identify that offspring	Use a model to identify	Use a model to identify	Develop a model to show	
	have similar	that organisms with	that the genetic	how the genetic	
	characteristics to their	similar characteristics	characteristics of a	characteristics of a	
	parents. (MS.2.8.b)	are related.	generation produced by	generation produced by	
		OR	asexual or sexual	asexual or sexual	
		Identify whether an	reproduction relate to	reproduction relate to the	
		organism is genetically	the previous generation.	previous generation.	
		related to the previous	(MS.2.8.b)	(MS.2.8.b)	
		generation.			
		(MS.2.8.b)			
PG 8.	Students can use the fu	II range of science and eng	ineering practices to make s	ense of natural phenomena	
	and solve problems that	t require understanding ho	w natural selection drives b	iological evolution,	
	accounting for the unit	y and diversity of organism	s.		
GLE		Identify that fossils are	Identify patterns in the	Use data to identify at least	
2.9,		evidence of organisms	fossil record that show	three examples of patterns	
2.10		that lived in the past.	changes in the level of	in the fossil record that	
		(MS.2.9.a)	complexity of anatomical	show changes in the level of	
			structures in organisms	complexity of anatomical	
			and the chronological	structures in organisms and	
			order of fossil	the chronological order of	
			appearance in the rock	fossil appearance in the rock	
			layers.	layers. (MS.2.9.a)	
			OR		
			Use data to identify that		
			the fossil record shows		
			changes in the level of		
			complexity of anatomical		
			structures in organisms		
			and that layering of		
			fossils reveals their		
			chronological order of		
			appearance. (MS.2.9.a)		
	Identify that two	Identify that fossils are	Identify patterns of	Use scientific information to	
	modern organisms	evidence of organisms	similarities and	explain that patterns of	
	with similar structures	that lived in the past.	differences among	similarities and differences	
	are likely more closely	(MS.2.9.b)	modern organisms and	among modern organisms	
	related than those		fossil organisms.	and fossil organisms are	
	without similar		(MS.2.9.b)	because of evolutionary	
	structures. (MS.2.9.b)			relationships. (MS.2.9.b)	
		Identify that an embryo	Use a display of pictorial	Use a display of pictorial	
		eventually develops into	data to compare patterns	data to compare embryonic	
		a recognizable	of embryonic	development patterns	
		organism. (MS.2.9.c)	characteristics across	across multiple species.	
			multiple species.	(MS.2.9.c)	
			(MS.2.9.c)		

	Life Science				
Emerging	Approaching Target	At Target	Advanced		
Identify that an	Identify that variations	Identify how variations of	Explain how variations of		
individual organism is	of traits in populations	traits in populations	traits in populations		
helped or hurt by one	increase some	increase some	increase some individuals'		
of its traits.	individuals' probability	individuals' probability of	probability of surviving and		
(MS.2.10.a)	of surviving and	surviving and	reproducing. (MS.2.10.a)		
	reproducing.	reproducing. (MS.2.10.a)			
	(MS.2.10.a)				
	Identify that some	Identify the relationship	Use mathematical thinking		
	genetic variations give	between genetic	to identify the relationship		
	some individuals an	variations among	between genetic variations		
	advantage in surviving	individuals and	among individuals and		
	and reproducing.	advantages or	advantages or		
	(MS.2.10.c)	disadvantages those	disadvantages those		
		individuals have for	individuals have for		
		surviving and	surviving and reproducing.		
		reproducing. (MS.2.10.c)	(MS.2.10.c)		
	Identify that natural	Identify the relationship	Use mathematical thinking		
	selection works over	between natural	to identify the relationship		
	many generations.	selection of genetic	between natural selection of		
	(MS.2.11.a)	variations over many	genetic variations over		
		generations and the	generations and the		
		increase and decrease of	increase and decrease of		
		specific traits in	specific traits in populations		
		populations over time.	over time. (MS.2.11.a)		
		(MS.2.11.a)			
Identify biodiversity as	Identify a solution for	Compare the economic			
a measure of the	maintaining the	costs, social			
health of an	biodiversity of an	considerations, or			
ecosystem.	ecosystem. (MS.2.12.a)	scientific constraints of			
(MS.2.12.a)		two design solutions for			
		maintaining the			
		biodiversity of an			
		ecosystem. (MS.2.12.a)			

		Earth and Sp	bace Science	
	Emerging	Approaching Target	At Target	Advanced
PG 9.	Students can use the fu	Ill range of science and eng	ineering practices to make	sense of natural phenomena
	and solve problems that	t require understanding th	e universe and Earth's plac	e in it.
GLE	Identify that the	Use a model of the	Use a model of the	Develop a model of the
3.1,	appearance of Earth's	Earth-Sun-moon system	Earth-Sun-moon system	Earth-Sun-moon system to
3.2	moon changes, or	to identify that the	to show the cyclic	show the cyclic patterns of
	Earth's seasons	appearance of Earth's	patterns of the moon's	the moon's common phases
	change, because of	moon changes, or	common phases and	and Earth's seasons.
	their relative	Earth's seasons change,	Earth's seasons.	(MS.3.1.a)
	positions. (MS.3.1.a)	because of their relative	(MS.3.1.a)	
		positions. (MS.3.1.a)		
		Identify gravity as what	Use a model to identify	Use a model to demonstrate
		keeps Earth and the	the role of gravity in the	the role of gravity in the
		moon in their orbits.	orbital motions of Earth	orbital motions of Earth and
		(MS.3.1.b)	and the moon.	the moon. (MS.3.1.b)
			(MS.3.1.b)	
		Identify gravity as what	Use a model to identify	Use a model to demonstrate
		draws and holds	the role of gravity in	the role of gravity in drawing
		together the matter	drawing and holding	and holding together the
		making up Earth and the	together the matter	matter making up Earth and
		moon. (MS.3.2.a)	making up Earth and the	the moon. (MS.3.2.a)
			moon. (MS.3.2.a)	
	Identify that all solar	Identify one similarity or	Use data to determine	
	system objects are	one difference among	at least one similarity	
	affected by gravity.	solar system objects.	and one difference	
	(MS.3.2.b)	(MS.3.2.b)	among solar system	
			objects. (MS.3.2.b)	
	Identify that the	Use a model of the	Use a model of the	Develop or use a model of
	appearance of Earth's	Earth-Sun-moon system	Earth-Sun-moon system	the Earth-Sun-moon system
	moon changes, or	to identify that the	to describe a cyclic	to compare the different
	Earth's seasons	appearance of Earth's	pattern in lunar phases,	cyclic patterns of lunar
	change, because of	moon changes, or	eclipses of the Sun and	phases, eclipses of the Sun
	their relative	Earth's seasons change,	the moon, and Earth's	and the moon, and Earth's
	positions. (MS.3.2.c)	because of their relative	seasons. (MS.3.2.c)	seasons. (MS.3.2.c)
		positions. (MS.3.2.c)		
PG	Students can use the fu	Ill range of science and eng	ineering practices to make	sense of natural phenomena
10.	and solve problems that	t require understanding ho	w and why Earth is consta	ntly changing.
GLE		Identify that rock strata	Identify evidence that	Use evidence to support the
3.3,		can be used to establish	supports the scientific	identification of the relative
3.4,		relative ages in Earth's	explanation that rock	ages of materials based on
3.5,		history. (MS.3.3.a)	strata can be used to	rock strata. (MS.3.3.a)
3.6,			establish relative ages in	
3.7			Earth's history.	
			(MS.3.3.a)	

Earth and Space Science						
Emerging	Approaching Target	At Target	Advanced			
Identify that heat	Use a model to identify	Use a model to identify	Develop or use a model to			
energy from Earth's	that the influence of the	that the influence of the	show how the influence of			
interior can change	Sun's energy on the	Sun's energy on the	the Sun's energy on the			
and form rocks.	water cycle and the heat	water cycle and the heat	water cycle and the heat			
(MS.3.4.a)	energy from Earth's	energy from Earth's	energy from Earth's interior			
	interior can change and	interior can act over	can act over time to change			
	form rocks. (MS.3.4.a)	time to change and form	and form rocks. (MS.3.4.a)			
		rocks. (MS.3.4.a)				
	Use scientific resources	Use scientific resources	Use scientific resources to			
	to identify a process	to identify fast and slow	describe fast and slow			
	that has changed Earth's	processes that have	processes that have changed			
	surface. (MS.3.4.b)	changed Earth's surface	Earth's surface on global			
		on global scales over	scales over time. (MS.3.4.b)			
		time. (MS.3.4.b)				
	Use data to identify	Use data on the shape	Use data on the shape of			
	plate motions as the	of continents, ocean	continents, ocean structure			
	cause of ocean structure	structure (ridges,	(ridges, fracture zones, and			
	(ridges, fracture zones,	fracture zones, and	trenches), and distribution of			
	and trenches).	trenches), and	fossils to represent the			
	(MS.3.5.a)	distribution of fossils to	phenomenon of plate			
		identify evidence of past	motions. (MS.3.5.a)			
		plate motions.				
		(MS.3.5.a)				
Identify a process that	Identify the fast and	Explain the fast and				
changes Earth's	slow processes that	slow processes that				
surface on a local	have changed Earth's	have changed Earth's				
scale over time.	surface on local scales	surface on local scales				
(MS.3.6.a)	over time. (MS.3.6.a)	over time. (MS.3.6.a)				
Identify a change that	Identify how the state of	Use a model to identify	Develop a model to show			
makes more water	water changes at one	how the state of water	how the state of water			
vapor, liquid water, or	stage of the water cycle.	changes as it moves	changes as it moves through			
ice. (MS.3.6.b)	(MS.3.6.b)	through the water cycle.	the water cycle. (MS.3.6.b)			
		(MS.3.6.b)				
Identify how the state	Identify that the motion	Use data to provide	Use data to identify how the			
of water changes	and interaction of air	evidence that the	motion and interaction of air			
when rain or snow	masses cause changes in	motion and interaction	masses cause changes in			
forms. (MS.3.6.c)	weather conditions.	of air masses cause	weather conditions.			
	(MS.3.6.c)	changes in weather	(MS.3.6.c)			
		conditions. (MS.3.6.c)				

	Earth and Space Science							
	Emerging	Approaching Target	At Target	Advanced				
	Identify that a location's climate is affected by the location's latitude, elevation, and proximity to oceans. (MS.3.6.d)	Identify a location's climate based on the location's latitude, elevation, and proximity to oceans. OR Use a model to identify two locations of similar or different climates. (MS.3.6.d)	Use a model to identify how the latitude, elevation, and proximity to oceans of a location determines the location's climate. (MS.3.6.d)	Develop a model to show how the latitude, elevation, and proximity to oceans of a location determines the location's climate. (MS.3.6.d)				
	Identify how the state of water changes when rain or snow forms. (MS.3.7.a)	Identify that the motion and interaction of air masses can cause severe weather. (MS.3.7.a)	Use evidence from an investigation to identify how the motion and interaction of air masses cause severe weather. (MS.3.7.a)	Plan an investigation to identify how the motion and interaction of air masses cause severe weather. (MS.3.7.a)				
	Identify that a region's climate is affected by the region's landforms and latitude. (MS.3.7.b)	Identify a regional climate based on the region's landforms and latitude. (MS.3.7.b)	Use a system model to identify different regional climates related to the Coriolis Effect, different landforms, and unequal heating due to latitude. (MS 3.7 b)	Develop a system model to identify different regional climates related to the Coriolis Effect, different landforms, and unequal heating due to latitude. (MS 3.7 b)				
PG 11.	Students can use the fu and solve problems tha interact.	Il range of science and eng t require understanding ho	ineering practices to make w human activities and Ea	sense of natural phenomena rth's surface processes				
GLE 3.9, 3.10	Identify that humans depend on limited resources from Earth. (MS.3.8.a)	Use scientific resources to identify evidence of how Earth's resources are limited and uneven. OR Identify that Earth's resources are limited and uneven as a result of geoscience processes. (MS.3.8.a)	Use scientific resources to identify evidence of how Earth's resources are limited and uneven as a result of geoscience processes. (MS.3.8.a)					
	Identify that humans need to prepare for natural hazards. (MS.3.9.a)	Use data to identify how some natural hazards can be predicted, prepared for, and mitigated. (MS.3.9.a)	Use patterns in data to show how some natural hazards can be predicted, prepared for, and mitigated. (MS.3.9.a)					

Earth and Space Science						
	Emerging	Approaching Target	At Target	Advanced		
	Identify that a human activity can affect the environment. (MS.3.10.a)	Identify how a human activity is likely to affect the environment. (MS.3.10.a)	Identify a solution to an environmental problem caused by humans in order to minimize the impact of the problem. (MS.3.10.a)	Develop a solution to an environmental problem caused by humans in order to minimize the impact of the problem. (MS.3.10.a)		
	Identify that humans use natural resources. (MS.3.10.b)	Identify that use of natural resources is likely to increase with an increase in human population. (MS.3.10.b)	Use data to identify the effect of increases in human population and the use of natural resources on Earth's systems. (MS.3.10.b)	Use data to explain or predict the effect of increases in human population and the use of natural resources on Earth's systems. (MS.3.10.b)		